CLAIMS

1. A video encoder for performing compression encoding of input video divided into predefined blocks, including a motion compensated prediction means for implementing a motion compensation by detecting a motion between frames of blocks of an input video, the video encoder comprising:

a motion detector, including a transformed block matching unit for transforming a reference image portion comprised of only integer pels, which consist of real sampling points, into an image portion having a predefined shape, for determining addresses of pels of a transformed reference image portion, and for matching the transformed reference image portion with the block of input video comprised of integer pels, and the motion detector outputting a motion vector providing a minimum prediction error; and

a motion compensator, including a corresponding pel determinator for transforming the reference image portion based on a motion parameter obtained from a comparison result of the transformed block matching unit, and for determining pels corresponding to pels of the reference image portion, and outputting a prediction image portion.

2. The video encoder according to claim 1, wherein the transformed block matching unit transforms a reference

image portion comprised of half-pels as well as integer

pels into an image portion having a predefined shape.

3. The video encoder according to claim 1 or 2, further

comprising a preprocessor for separating an input video

into video objects each of which is an encoding unit, the

video encoder dividing the video object into blocks,

detecting a motion, and compensating a motion of a

divided video object.

4. The video encoder according to claim 1 or 2,

wherein the transformed block matching unit

transforms the reference image portion comprised of half-

pels as well as integer pels into one of an image portion

scaled down at a specific ratio and an image portion

scaled up at a specific ratio, determines the addresses

of pels of a transformed reference image portion, and

matches the transformed reference image portion with the

input image portion;

wherein the motion compensator transforms the

reference image portion based on the motion parameter,

determines addresses of pels of a transformed reference

image portion, and outputs a motion prediction image.

5. The video encoder according to claim 1 or 2,

wherein the transformed block matching unit transforms

the reference image portion comprised of integer pels and

half-pels into an image portion rotated by a predefined

angle, determines addresses of pels of a transformed

reference image portion, and matches the transformed

reference image portion with the input image; and

wherein the motion compensator transforms the

reference image portion based on the motion parameter,

determines addresses of pels of a transformed reference

image portion, and outputs a motion prediction image.

6.   The video encoder according to claim 5, wherein the

transformed block matching unit transforms a reference

image portion comprised of integer pels and half-pels

into an image portion rotated by one of angles of ±45°,

±90°, ±135°, and ±180°.

7.   The video encoder according to claim 1,

wherein the transformed block matching unit

transforms the reference image portion, which has been

translated within a search range of the reference image,

into one of an image portion scaled up, an image portion

scaled down, an image portion rotated by a predefined

angle, determines addresses of pels of a transformed

reference image portion, and matches the transformed

reference image portion with the input image, and

wherein the motion compensator transforms the

reference image portion based on the motion parameter,

determines addresses of pels of a transformed reference

image portion, and outputs a motion prediction image.

8.   The video encoder according to claim 1 or 2,

wherein the transformed block matching unit has a

transformation pattern table for transforming the

reference image portion, and matches the reference image

portion transformed according to the transformed value

obtained from the transformation pattern table with the

input image comprised of integer pels and half-pels, and

wherein the motion compensator transforms the

reference image portion based on the motion parameter,

determines addresses of pels of a transformed reference

image portion, and outputs a motion prediction image.

9.   The video encoder according to claim 1 or 2, wherein

the transformed block matching unit selectively filters

specific pels of the reference image portion extracted

for matching, and matches the transformed reference image

portion with the input image portion.

10.   The video encoder according to claim 1 or 2, wherein

the reference image used for detecting the motion is the

frame which is forward or backward in time and stored in

a frame memory for reference, and wherein the transformed

block matching unit matches the transformed reference

image portion with the input image using the frame.

11.   A video decoder for decoding an input compressed

video data, the video decoder including motion

compensated prediction means for implementing motion

compensation by detecting a motion between frames,

wherein the motion compensated prediction means has a mechanism for determining pels of a corresponding image portion comprised of predefined integer pels by transforming the corresponding reference image portion into a predefined shape according to motion parameters included in the input compressed video data, for extracting the integer pels determined, and for adding the transformed reference image portion and the decoded video signal so as to produce a decoded video data.

12. The video decoder according to claim 11, wherein the motion compensated prediction means further includes a mechanism for determining pels of the corresponding reference image portion comprised of half-pels as well as integer pels by transforming the corresponding reference image portion into one of an image portion scaled up, an image portion scaled down, and an image portion rotated in the same way as a transformed block matching unit of a motion detector comprised in a video encoder corresponding to the video decoder.

13. A video encoding method for performing compression encoding of an input digital video, comprising:

a motion compensated prediction means for storing a reference image, for dividing the reference image into predefined blocks, and for detecting a motion between

frames;

transformed block matching step for transforming a reference image portion comprised of integer pels into an image portion having predefined shape, for determining addresses of pels of a transformed reference image portion to generate a prediction image portion, and for matching the transformed reference image portion with the block of the input digital video;

corresponding pel determining step for determining pels of the reference image portion by using the address of transformed reference image portion based on a motion vector providing a minimum error selected by the transformed block matching step, and for supplying a motion compensated output.

14. The video encoding method according to claim 13, wherein the transformed block matching step transforms a reference image portion comprised of half-pels as well as integer pels into an image portion having a predefined shape as a reference, determines addresses of pels of a transformed reference image portion to generate a prediction image portion, and matches the transformed reference image portion with the input digital video.

15. The video encoding method according to claim 13 or 14,

wherein the transformed block matching step further

comprises a transformation pattern table, transforms the reference image portion based on transformation value corresponding to an address from the transformation pattern table, and matches the transformed reference image portion with the input digital video.

16. A video decoding method for decoding an input compressed video data including a motion compensated prediction means for storing a reference image, for dividing the reference image into predefined blocks, and for implementing a motion compensation between frames, comprising;

a motion compensated prediction step for transforming a reference image portion comprised of predefined integer pels into an image portion having a predefined shape, which corresponds to a video encoding method of a transmitter, based on a reference parameter included in the input compressed video data, for extracting addresses of pels of a transformed reference image portion, and for outputting a prediction image portion; and

decoding adding step for adding the prediction image portion, and for obtaining a reproduced video data.

17. The video decoding method according to claim 16, wherein the motion compensated prediction step transforms a reference image portion comprised of half-pels as well

as integer pels into an image portion having a predefined
shape, extracts addresses of pels of a transformed
reference image portion, and outputs a prediction image
portion.

18.   A video encoding/decoding system comprising:

a video encoder for performing compression encoding
of input video divided into predefined blocks, including
a motion compensated prediction means for implementing a
motion compensation by detecting a motion between frames
of blocks of an input video, the video encoder
comprising:

a motion detector, including a transformed
block matching unit for transforming a reference
image portion comprised of only integer pels, which
consist of real sampling points, into an image
portion having a predefined shape, for determining
addresses of pels of a transformed reference image
portion, and for matching the transformed reference
image portion with the block of input video
comprised of integer pels, and the motion detector
outputting a motion vector providing a minimum
prediction error; and

a motion compensator, including a corresponding
pel determinator for transforming the reference
image portion based on a motion parameter obtained

from a comparison result of the transformed block

matching unit, and for determining pels

corresponding to pels of the reference image

portion, and outputting a prediction image portion;

and

a video decoder for decoding an input compressed

video data, the video decoder including motion

compensated prediction means for implementing motion

compensation by detecting a motion between frames,

wherein the motion compensated prediction means

has a mechanism for determining pels of a

corresponding image portion comprised of predefined

integer pels by transforming the corresponding

reference image portion into a predefined shape

according to motion parameters included in the input

compressed video data, for extracting the integer

pels determined, and for adding the transformed

reference image portion and the decoded video signal

so as to produce a decoded video data.